

3. Behind the Bottom Line

Oil and Natural Gas Production and Reserve Replacement

Both worldwide oil production and worldwide natural gas production by the Financial Reporting System (FRS) companies declined about 1.3 percent in 2004 (**Table 10**). The only areas that showed increased production were foreign oil and U.S. onshore natural gas. Foreign oil production reversed its decline of 2003 and continued its long-term upward trend (**Figure 23**). While onshore oil production has been steadily declining over the long term, offshore oil production only began declining in 2002. Onshore natural gas production in 2004, similar to foreign oil production, reversed its decline of 2003 and continued its long-term upward trend (**Figure 24**). Foreign natural gas production declined for the first time since 1989, while offshore natural gas production marked its third consecutive yearly decline, after remaining essentially flat for many years.

| Table 10. Oil and Gas Reserves and Production for FRS Companies, 2003 and 2004 | | | | | | | | |
|---|--------------|--------|---------------|--------|---------|---------|-----------|---------|
| Reserves and Production | U.S. Onshore | | U.S. Offshore | | Foreign | | Worldwide | |
| | 2003 | 2004 | 2003 | 2004 | 2003 | 2004 | 2003 | 2004 |
| Oil (million barrels) | | | | | | | | |
| Drillbit Additions | 600 | 800 | 234 | (30) | 2,266 | (416) | 3,100 | 355 |
| Net Purchases | (23) | (67) | 18 | (28) | 87 | (77) | 82 | (172) |
| Net Reserve Additions | 577 | 733 | 252 | (58) | 2,353 | (493) | 3,181 | 182 |
| Production | 819 | 780 | 459 | 427 | 1,714 | 1,743 | 2,991 | 2,951 |
| Year-end Oil Reserves | 11,089 | 11,051 | 4,239 | 3,792 | 18,589 | 16,375 | 33,916 | 31,218 |
| Oil Reserve Replacement Rate ^a (percent) | 73 | 103 | 51 | (7) | 132 | (24) | 104 | 12 |
| Gas (billion cubic feet) | | | | | | | | |
| Drillbit Additions | 6,585 | 9,642 | 470 | 619 | 10,092 | 8,807 | 17,147 | 19,068 |
| Net Purchases | 955 | 2,308 | (219) | (489) | (572) | (1,315) | 164 | 503 |
| Net Reserve Additions | 7,540 | 11,951 | 251 | 129 | 9,520 | 7,491 | 17,311 | 19,571 |
| Production | 5,872 | 5,985 | 2,472 | 2,189 | 7,047 | 7,012 | 15,391 | 15,186 |
| Year-end Gas Reserves | 70,528 | 78,183 | 14,852 | 13,164 | 91,544 | 92,067 | 176,924 | 183,414 |
| Gas Reserve Replacement Rate ^a (percent) | 112 | 161 | 19 | 28 | 143 | 126 | 111 | 126 |

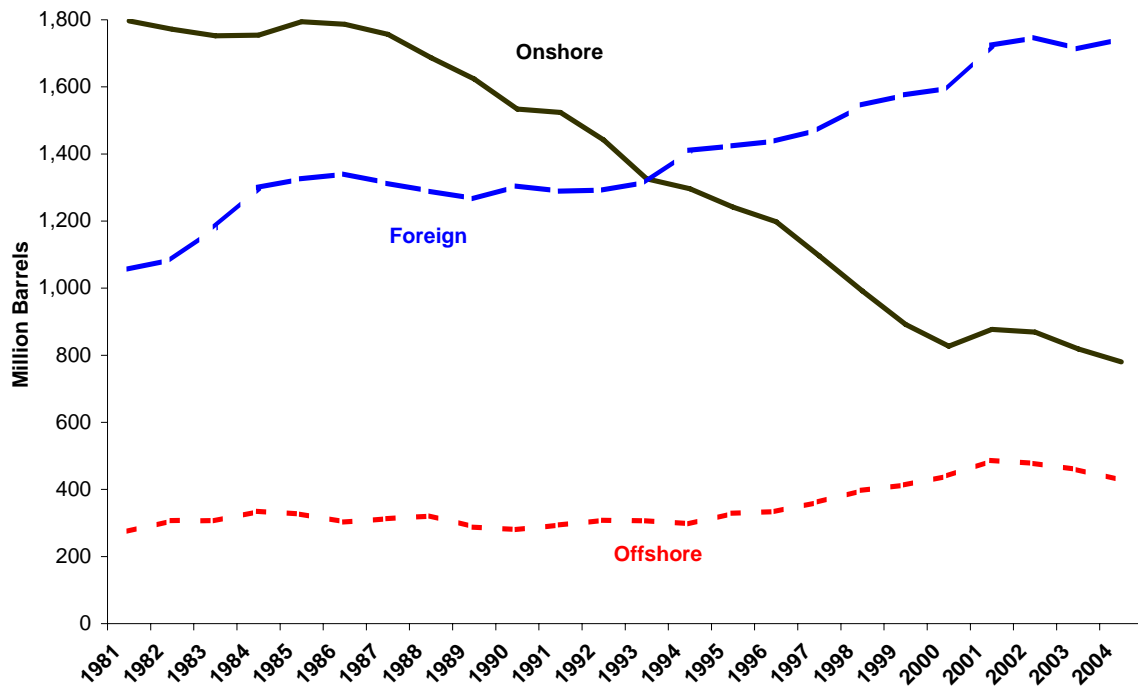
^aExcludes purchases and sales of reserves.

Note: Sum of components may not equal totals due to independent rounding.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

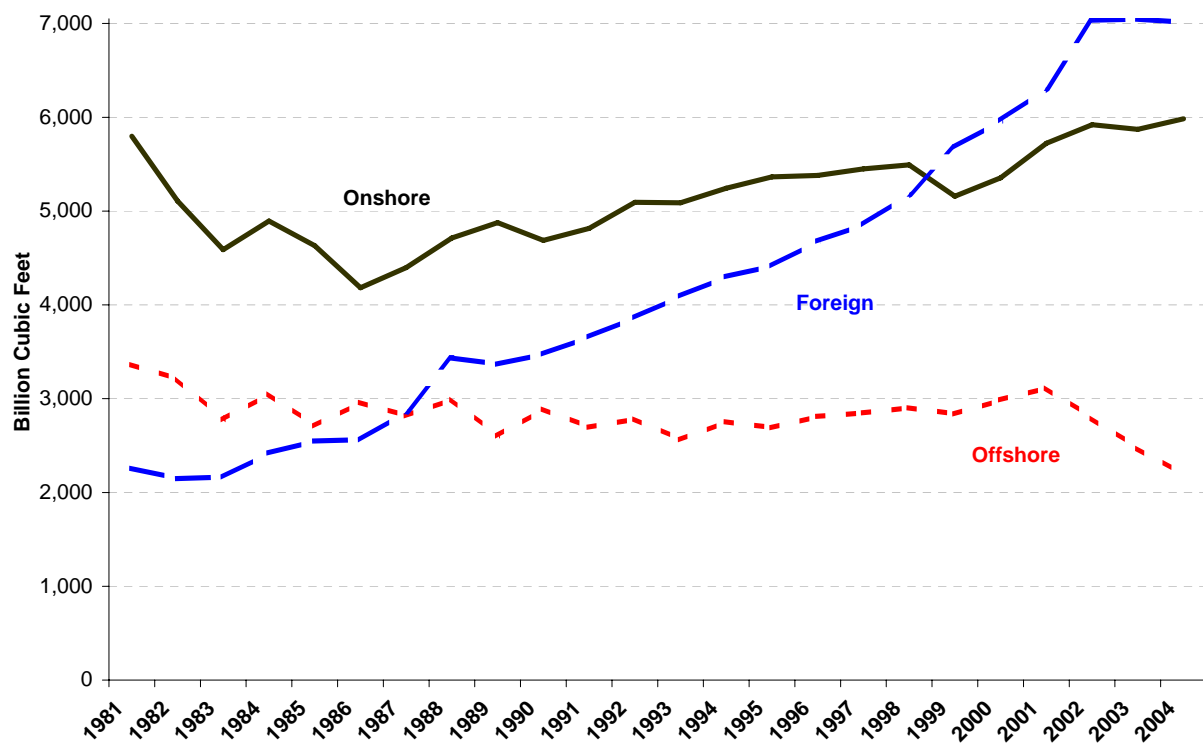
Geographically, reserve replacement (proved reserves found by drilling as a percentage of reserves removed by production) by the FRS companies in 2004 was widely uneven. The U.S. onshore region replaced more than 100 percent of its natural gas production, and, less true to form, more than 100 percent of its oil production (**Table 10**). In both cases, revisions to previous reserve estimates played an important role. For oil, more onshore reserves were added through revisions than through either extensions and discoveries or through the application of improved recovery techniques (the other two categories of reserve additions excluding purchases). For natural gas, while extensions and discoveries, usually the largest category, still added the most reserves, revisions swung from 3 years of negative values to a positive 2.3-trillion-cubic-foot increase. Price increases for both oil and natural gas were one of the major reasons for the substantial upward revisions in domestic reserves. Higher prices allow more resources to be classified as proved reserves because one requirement for proved reserves is that they be economic to produce. Thus resources that are expensive to produce may be uneconomic at lower prices, but economic, and included in proved reserves, with higher prices.

Figure 23. Oil Production for FRS Companies, 1981-2004



Source: Energy Information Administration, Form EIA-28, (Financial Reporting System).

Figure 24. Natural Gas Production for FRS Companies, 1981-2004



Source: Energy Information Administration, Form EIA-28, (Financial Reporting System).

The U.S. offshore region had reserve replacement rates of 28 percent for natural gas and –7 percent for oil in 2004. That is, it replaced only about one quarter of its natural gas production and did not replace any of its oil production (excluding the effect of purchases and sales of reserves). In fact, negative revisions to oil reserves exceeded additions from improved recovery and extensions and discoveries. Both oil and natural gas reserve revisions in the offshore were negative in 2004, although not as negative as in 2003. What led to the large drop for oil was a fall in extensions and discoveries by 70 percent, to their lowest level since 1992. If extensions and discoveries in offshore oil had been the same in 2004 as in 2003, the region would have had a higher replacement rate in 2004 than it did the previous year.

In 2004, foreign reserve replacement was negative for oil but 126 percent for natural gas. Oil reserve revisions were negative for every FRS region except Organization for Economic Cooperation and Development (OECD) Europe (primarily the North Sea), and oil extensions and discoveries declined in every foreign region except Africa and the Other Western Hemisphere (the Western Hemisphere less the United States and Canada). As a result, foreign oil reserve additions excluding purchases and sales of reserves were a negative 416 million barrels. In the rising price climate of 2004, contracts called production-sharing agreements likely contributed to the negative foreign reserve revisions. These are contracts between foreign governments, which own the reserves, and the oil companies that stipulate the oil company's share of the oil and natural gas produced from any particular project that it has undertaken, based on certain conditions. It is common for these contracts to specify that, as oil prices rise, the share of production that the oil company retains (and thus its implied share of the reserves) decreases.

Upstream Income

The financial performance of the oil and natural gas production operations of the FRS companies improved further in 2004, with worldwide net income (excluding unusual items) of \$58 billion on worldwide revenues from oil and natural gas sales of \$173 billion (**Table 11**). While domestic operating expenses decreased slightly from 2003, foreign operating revenues and expenses increased substantially. Operating income and income taxes, both domestic and foreign, also increased. The effective income tax rate, income tax expense as a percent of pretax income, rose about one percentage point for domestic and foreign operations, to 36 and 45 percent, respectively.

Lifting Costs

Lifting costs (also called production costs) are the out-of-pocket costs per barrel of oil and natural gas (measured on a barrel-of-oil equivalent [boe] basis) produced to operate and maintain wells and related equipment and facilities after hydrocarbons have been found, acquired, and developed for production. Total lifting costs are divided into direct lifting costs and production taxes.

Mirroring the results of 2003, total expenses for oil and natural gas production rose in 2004, despite the decline in the volume of worldwide oil and natural gas produced (**Tables 10 and 11**). As a result, total lifting costs increased by 10 percent worldwide (**Table 12**). This increase was more moderate than in 2003, when total lifting costs increased 14 percent. Total lifting costs increased in all FRS regions except Canada. The U.S. offshore region (primarily the Gulf of Mexico) relinquished its position as the region with the lowest total lifting costs after experiencing an increase in cost of 27 percent, probably due to higher direct lifting costs. (FRS data do not separate production taxes from direct lifting costs in the United States).

While production tax increases drove the increase in total lifting costs in 2003, direct lifting cost increases drove the increase in 2004 (**Table 12**). Direct lifting costs increased in every region

Table 11. Income Components and Financial Ratios in Oil and Natural Gas Production for FRS Companies, 2003 and 2004
(Billion Dollars)

| Income Components and Financial Ratios | Worldwide | | United States | | Foreign | |
|--|-----------|-------|---------------|-------|---------|-------|
| | 2003 | 2004 | 2003 | 2004 | 2003 | 2004 |
| Oil and Natural Gas Revenues | | | | | | |
| Oil | NA | NA | 35.0 | 43.5 | NA | NA |
| Natural Gas | NA | NA | 39.4 | 43.2 | NA | NA |
| Total Revenues | 141.9 | 173.5 | 74.5 | 86.7 | 67.4 | 86.8 |
| Expenses | | | | | | |
| Depreciation, Depletion, and Amortization | 29.0 | 31.1 | 16.0 | 16.0 | 13.0 | 15.1 |
| Production Costs | 27.9 | 30.5 | 13.6 | 14.7 | 14.4 | 15.8 |
| Exploration Expenses | 5.2 | 5.1 | 1.5 | 4.2 | 3.7 | 0.9 |
| General and Administrative Expenses | 2.0 | 3.0 | 1.2 | 2.0 | 0.9 | 0.9 |
| Other Costs (Revenues) ^a | 12.3 | 13.3 | 10.7 | 5.8 | 1.6 | 7.5 |
| Total Operating Expenses | 76.1 | 82.4 | 42.5 | 42.2 | 33.6 | 40.2 |
| Operating Income | 65.9 | 91.1 | 32.0 | 44.5 | 33.9 | 46.6 |
| Other Income (Expense) ^b | 6.5 | 7.8 | 2.6 | 2.8 | 3.9 | 5.0 |
| Income Tax Expense | 28.4 | 40.0 | 12.0 | 17.0 | 16.4 | 23.0 |
| Net Income | 44.0 | 59.0 | 22.6 | 30.4 | 21.3 | 28.6 |
| Less Unusual Items | (0.7) | 0.6 | (0.5) | 0.1 | (0.3) | 0.5 |
| Net Income, Excluding Unusual Items | 44.7 | 58.4 | 23.1 | 30.3 | 21.6 | 28.1 |
| Unit Values (Dollars per BOE of Production) ^c | | | | | | |
| Direct Lifting Costs (Excluding Taxes) | 3.87 | 4.23 | 3.77 | 4.19 | 3.96 | 4.25 |
| Production Taxes | 1.00 | 1.16 | 1.13 | 1.32 | 0.88 | 1.01 |
| Percentages | | | | | | |
| Return on Investment ^d | 15.28 | 18.55 | 16.46 | 20.17 | 14.21 | 17.10 |
| Effective Tax Rate ^e | 39.42 | 40.55 | 34.69 | 36.01 | 43.78 | 44.72 |

^aOther Costs (Revenues) include Raw Material Purchases. The Production Segment was prohibited from purchasing natural gas and NGLs for resale to third parties and unconsolidated affiliates beginning in 2003.

^bEarnings of unconsolidated affiliates and gain (loss) on disposition of assets.

^cBOE = Barrels of oil equivalent. Natural gas is converted to equivalent barrels of oil at 0.178 barrels per thousand cubic

^dNet Income divided by net investment in place (Net investment in place = net property, plant, and equipment plus investments and advances to unconsolidated affiliates).

^eIncome tax expense divided by pretax income.

NA = Not available.

Note: Sum of components may not equal total due to independent rounding.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

except Canada and the Other Western Hemisphere, the latter of which already had the lowest direct lifting costs of the FRS regions. The former Soviet Union and Eastern Europe became the region with the highest direct lifting costs in 2004, rising from second place in 2003, while the Other Eastern Hemisphere (primarily Asia Pacific, excluding the former Soviet Union) experienced the highest proportional increase in direct lifting costs.

In the longer term, domestic and foreign direct lifting costs have been almost mirror images of each other since 1991 (**Figure 25**). Direct lifting costs began increasing in 1999–2000, after declining during the 1990s, which is not surprising, given the high prices of oil and natural gas in recent years. Producers are willing to spend more to produce oil and natural gas when their prices are higher.

Table 12. Lifting Costs by Region for FRS Companies, 2003 and 2004
(Dollars Per Barrel of Oil Equivalent)

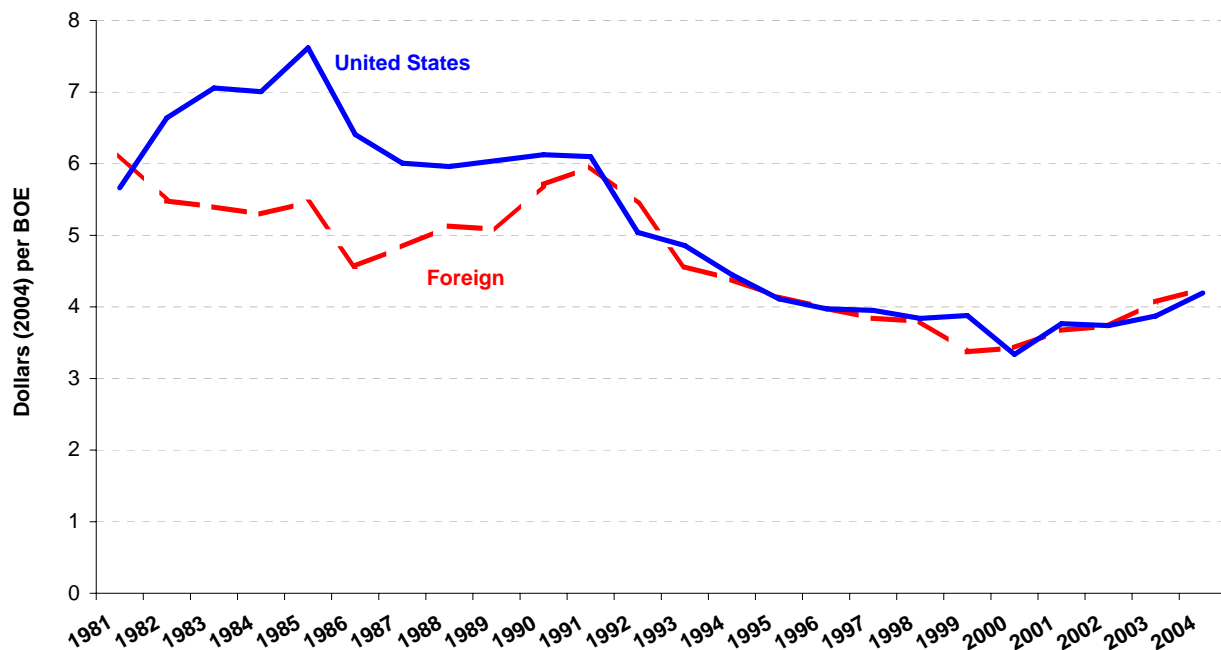
| Region | Direct Lifting Costs | | | Production Taxes | | | Total | | |
|--|----------------------|------|----------------|------------------|------|----------------|-------|------|----------------|
| | 2003 | 2004 | Percent Change | 2003 | 2004 | Percent Change | 2003 | 2004 | Percent Change |
| United States | | | | | | | | | |
| Onshore | -- | -- | -- | -- | -- | -- | 5.66 | 6.08 | 7.4 |
| Offshore | -- | -- | -- | -- | -- | -- | 3.34 | 4.25 | 27.3 |
| Total United States | 3.77 | 4.19 | 11.2 | 1.13 | 1.32 | 17.0 | 4.90 | 5.52 | 12.5 |
| Foreign | | | | | | | | | |
| Canada | 5.34 | 5.15 | -3.5 | 0.23 | 0.23 | 2.9 | 5.56 | 5.38 | -3.3 |
| OECD Europe | 4.39 | 4.54 | 3.4 | 0.84 | 0.70 | -16.8 | 5.23 | 5.24 | 0.1 |
| Former Soviet Union and Eastern Europe | 4.43 | 5.74 | 29.6 | 0.75 | 1.24 | 64.8 | 5.18 | 6.98 | 34.7 |
| Africa | 3.89 | 4.06 | 4.5 | 1.32 | 1.51 | 14.4 | 5.20 | 5.57 | 7.0 |
| Middle East | 3.99 | 4.36 | 9.4 | 0.15 | 0.19 | 25.7 | 4.14 | 4.56 | 10.0 |
| Other Eastern Hemisphere | 2.97 | 4.26 | 43.5 | 1.09 | 1.53 | 39.9 | 4.06 | 5.79 | 42.6 |
| Other Western Hemisphere | 2.14 | 1.88 | -12.0 | 1.45 | 1.72 | 18.1 | 3.59 | 3.60 | 0.2 |
| Total Foreign | 3.96 | 4.25 | 7.3 | 0.88 | 1.01 | 15.2 | 4.84 | 5.27 | 8.8 |
| Worldwide Total | 3.87 | 4.23 | 9.1 | 1.00 | 1.16 | 15.8 | 4.87 | 5.39 | 10.5 |

-- = Data not available.

Notes: Natural gas is converted to equivalent barrels of oil at 0.178 barrels per thousand cubic feet. Sum of components may not add to total due to independent rounding.

Source: Energy Information Administration, Form EIA-28, (Financial Reporting System).

Figure 25. Direct Oil and Gas Lifting Costs for FRS Companies, 1981-2004



Note: Direct lifting costs are the costs of extracting oil and gas, excluding production taxes.

BOE = Barrels of oil equivalent.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

Finding Costs

Finding costs are the costs of adding proven reserves of oil and natural gas through exploration and development activities and the purchase of properties that might contain reserves.⁶⁶ They are measured for oil and natural gas on a combined basis in units of dollars per boe. Ideally, finding costs would include all the costs incurred (no matter when a company incurred these costs or actually recognized them on its books) in finding any particular proven reserves (not including the purchases of already discovered reserves). In practice, finding costs are actually measured as the ratio of exploration and development expenditures (except the expenditures on proved acreage) to proven reserve additions (excluding net purchases of proven reserves) over a specified period of time.⁶⁷ Generally, *Performance Profiles* measures finding costs as a weighted average over a period of 3 years, and, if it presents several years of data, usually reports them in constant dollars (to facilitate comparisons over time).

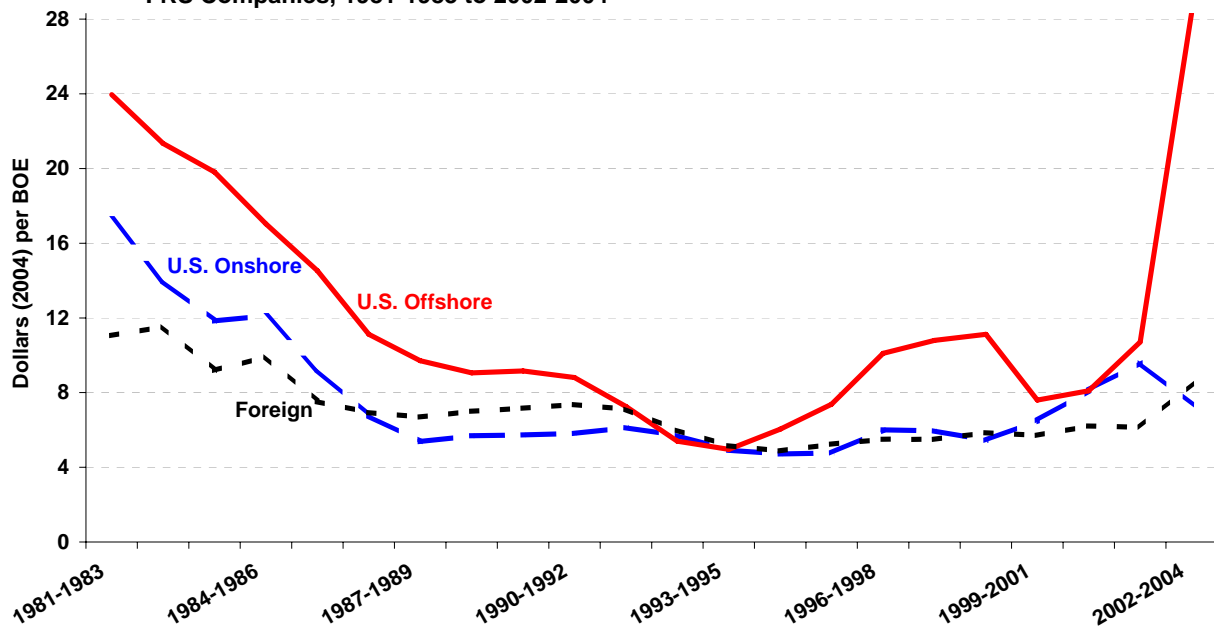
Average worldwide finding costs for the FRS companies rose \$1.91 per boe for the 2002–2004 period (**Table 13**), easily the largest real dollar increase in the history of the FRS, for which comprehensive finding costs data date back to the 1981–1983 period. This increase was entirely due to smaller additions to reserves by drilling, because spending to find more reserves by drilling decreased slightly. The most important change contributing to the decline in reserves was a decline in oil and natural gas reserve revisions of 2.5 billion boe, which was more than accounted for by a decline in revisions to oil reserves. In fact, revisions to worldwide total reserves and oil reserves were both negative for the 2002–2004 period.

| Table 13. Finding Costs by Region for FRS Companies, 2001-2003 and 2002-2004 (Dollars per Barrel of Oil Equivalent) | | | |
|--|---------------|---------------|-------------------|
| Region | 2001- 2003 | 2002- 2004 | Percent Change |
| United States | | | |
| Onshore | 9.16 | 7.18 | -21.6 |
| Offshore | 10.24 | 27.66 | 170.0 |
| Total United States | 9.56 | 10.33 | 8.1 |
| Foreign | | | |
| Canada | 12.26 | 26.09 | 112.8 |
| OECD Europe | 9.86 | 12.16 | 23.3 |
| Former Soviet Union and Eastern Europe | 2.63 | 4.30 | 63.8 |
| Africa | 5.79 | 7.55 | 30.4 |
| Middle East | 4.05 | 6.76 | 67.1 |
| Other Eastern Hemisphere | 4.05 | 6.18 | 52.5 |
| Other Western Hemisphere | 3.98 | 4.98 | 25.0 |
| Total Foreign | 5.87 | 8.30 | 41.3 |
| Worldwide | 7.28 | 9.18 | 26.2 |
| Notes: The above figures are 3-year weighted averages of exploration and development expenditures (current dollars), excluding expenditures for proven acreage, divided by reserve additions, excluding net purchases of reserves. Natural gas is converted to equivalent barrels of oil at 0.178 barrels per thousand cubic feet. Sum of components may not add to total due to independent rounding. | | | |
| Source: Energy Information Administration, Form EIA-28 (Financial Reporting System). | | | |

With a substantial 170-percent increase, finding costs in the U.S. offshore region jumped to the highest level among the FRS regions in 2002–2004, with 3-year finding costs of \$27.66 per boe, just edging out the previous leader, Canada, which nonetheless experienced an increase of 113 percent (**Table 13**). For Canada, the major contributor to the rise was a decrease in oil reserve revisions by 777 million barrels, most of which was in 2004. In the U.S. offshore, a billion barrel decline in extensions and discoveries of oil reserves in the 2002–2004 period, to their lowest level since 1992, was the major source of the decline, although oil revisions decreased 331 million barrels. For further discussion of reserve changes, see the section titled “Oil and Natural Gas Production and Reserve Replacement.” Spending to find new reserves was down 9 percent in Canada but increased slightly in the offshore. Finding costs for the U.S. onshore region declined in 2002–2004, in part because expenditures declined 5 percent, but chiefly because revisions to natural gas reserves increased 759 million boe. This limited the increase in total domestic finding costs for the FRS companies to 8.1 percent as U.S. offshore reserve additions were only 15.4 percent of domestic reserve additions for the 2002–2004 period.

In general, finding costs have been rising since the middle of the 1990s and have been more variable for the U.S. offshore region than for the U.S. onshore region or the combined foreign regions (**Figure 26**). The rise in offshore finding costs in the 2002–2004 period is clearly the most spectacular in the history of the FRS. However, offshore finding costs did rise substantially in the 1996–1998 period, only to fall even further in 1999–2001. The 22-percent fall in the U.S. onshore region’s finding costs in 2002–2004 was the largest since 1986–1988, while the 41-percent rise in foreign finding costs was the largest in the history of the FRS.

Figure 26. U.S. Onshore, U.S. Offshore, and Foreign Three-Year Weighted-Average Finding Costs for FRS Companies, 1981-1983 to 2002-2004



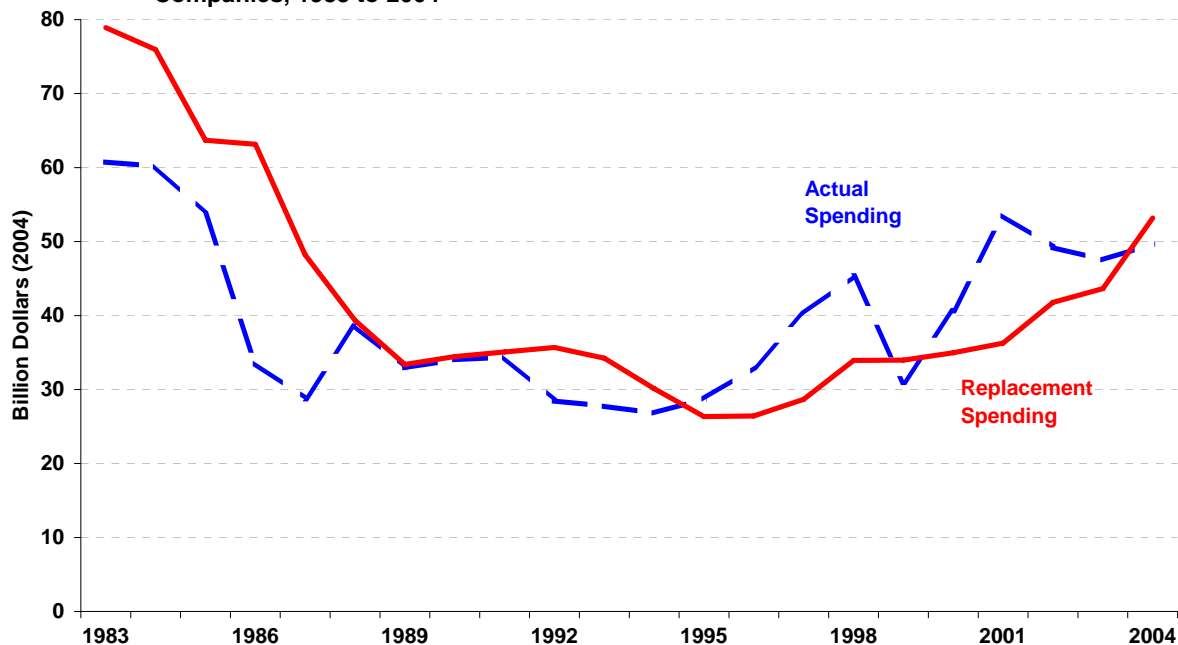
Notes: Three-year finding costs are the quotient of costs and reserve additions for each three-year period. BOE = Barrels of oil equivalent.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

Spending to Replace Oil and Gas Production by the FRS Companies

The historical finding costs and production levels of the FRS companies can be used to estimate what it would cost them to find additional reserves (excluding purchases) sufficient to replace their production for any given year.⁶⁸ Actual exploration and development spending for new reserves (excluding purchases) for the FRS companies in 2004, while higher than the previous year, fell below this estimate of the cost to replace their reserves removed through production for the first time since 1999; they also remained below their recent peak in 2001 for the third straight year (**Figure 27**). However, actual spending has exceeded the amount necessary to replace production in eight of the past 10 years, while both have steadily increased since the mid 1990s, when finding costs began rising (**Figure 26**).

Figure 27. Actual Spending to Find Reserves and Spending Needed to Replace Production for FRS Companies, 1983 to 2004

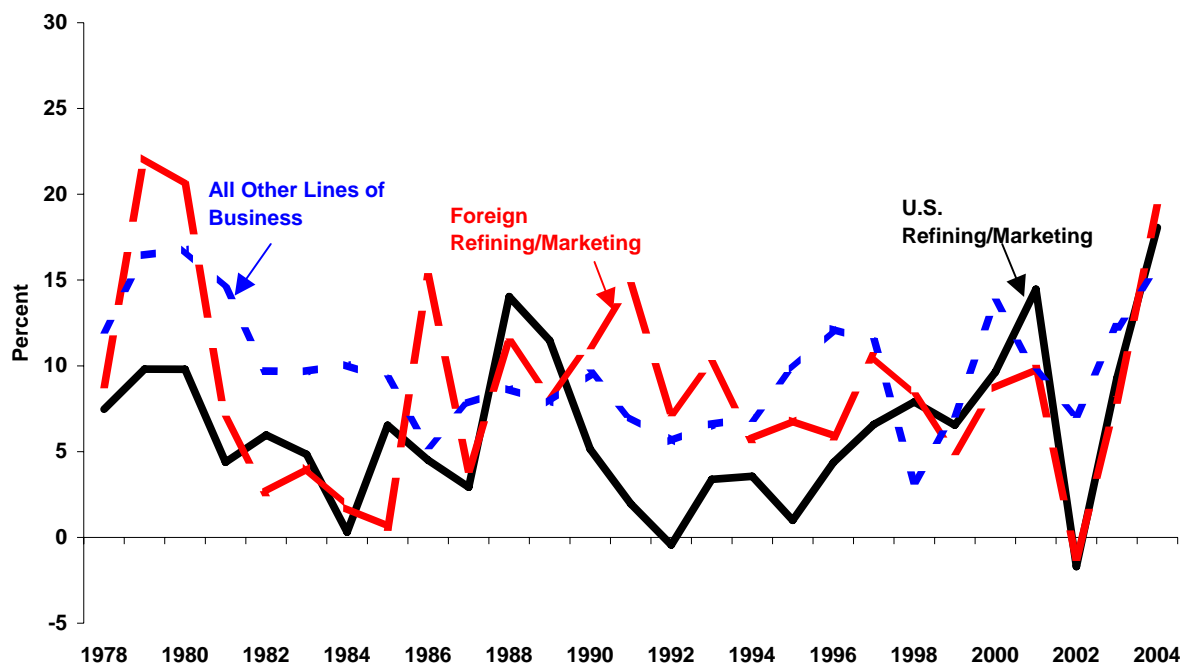


Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

U.S. Refining and Marketing

The profitability of the U.S. refining/marketing operations of the FRS companies reached an FRS all-time high during 2004 (dating back to 1977). The new all-time high of 18-percent return on investment (ROI) exceeded the previous all-time high, registered in 1989, by more than 3 percentage points and essentially doubled the 9-percent ROI of 2003. This result continues the variability in earnings that has affected the FRS companies' U.S. refining/marketing operations over the past 4 years (**Figure 28**). In 2001, U.S. refining/marketing had what was then the second highest year in terms of profitability in the history of the FRS at 14.5 percent. The following year was the worst year in the history of the FRS at -1.7 percent. Subsequently, 2003 was slightly above average at 9.3 percent. Finally, a new all-time high was reached in 2004 at 18.1 percent (with signs that 2005 may be characterized by an even greater level of profitability). The ongoing cost-cutting efforts that have characterized the domestic refining/marketing operations of the FRS

Figure 28. Return on Investment in U.S. and Foreign Refining/Marketing, and All Other Lines of Business for FRS Companies, 1978-2004



Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

companies since the 1990s still appear important in view of the variability of profitability in this business segment.

The change in the profitability of U.S. refining/marketing operations can be explored by examining the net refined product margin (net margin), which is highly correlated with profitability.⁶⁹ The net margin is the gross margin (essentially the difference between petroleum product prices and crude oil costs)⁷⁰ minus out-of-pocket operating costs per barrel of refined product sold. The net margin measures before-tax cash earnings from the production and sale of refined products.⁷¹ The \$2.99-per-barrel net margin of 2004 was the highest (in terms of 2004 dollars) in the 28-year history of the FRS (**Figure 5** (see Chapter 1)).

The gross refining margin received by the FRS companies increased 14 percent compared to 2003 (**Table 14**). The average price received for petroleum products increased \$10.69 per barrel, while raw materials and purchased product costs rose \$9.66 per barrel, which resulted in a \$1.04-per-barrel increase in the gross refining margin.

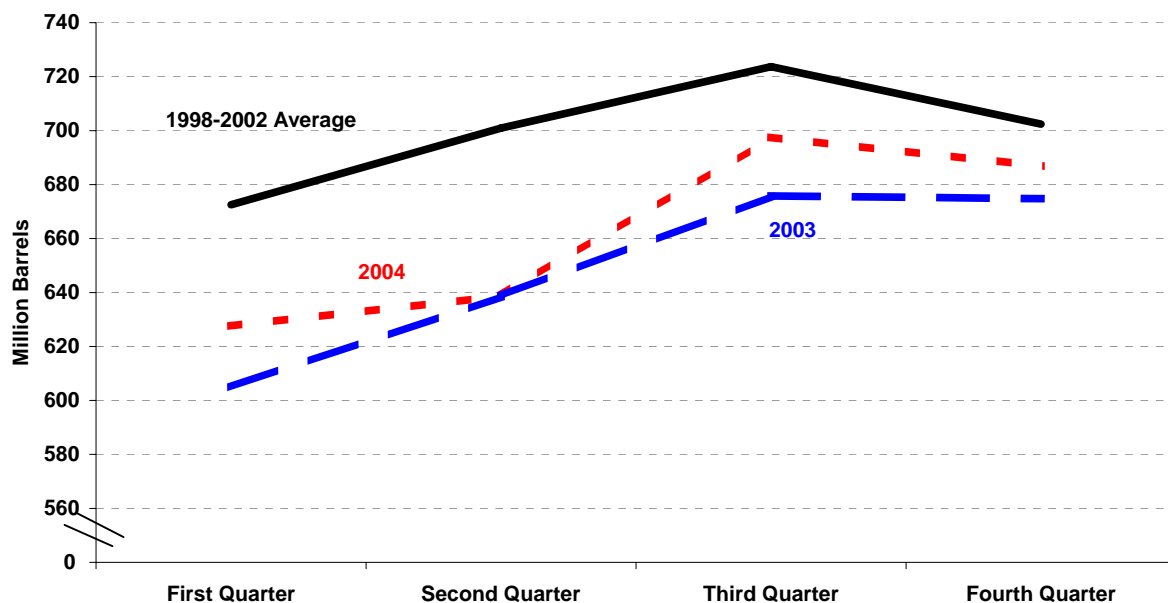
Petroleum product prices were driven higher by increased crude oil costs and tighter product markets, as evidenced by low inventory levels. Although product stock levels were higher in 2004 than in 2003, they were lower than recent historical levels (i.e., the 5-year average over the 1998 through 2002 period), putting upward pressure on product prices (**Figure 29**). Additionally, heating oil stock levels during the fourth quarter of 2004 were 11-percent lower than a year earlier (**Figure 30**). Further, industry-wide stocks of motor gasoline were lower throughout the year relative to both 2003 and the 5-year average over the 1998 through 2002 period (**Figure 31**).⁷² Lower inventory levels and higher crude oil prices put upward pressure on product prices despite somewhat milder weather (4 percent fewer cooling degree days and 4 percent fewer gas-

Table 14. Sales, Prices, Costs, and Margins in U.S. Refining/Marketing for FRS Companies, 2003-2004

| | 2003 | 2004 | Percent Change 2003-2004 |
|---|------------------------------|-------|--------------------------|
| Refined Product Sales (Million Barrels per Day) | 22.1 | 22.6 | 2.1 |
| | (Nominal Dollars per Barrel) | | |
| Gasoline Average Price | 42.04 | 54.63 | 30.0 |
| Distillate Average Price | 37.64 | 49.42 | 31.3 |
| Other Products Average Price | 32.87 | 36.60 | 11.4 |
| All Refined Products Average Price | 39.17 | 49.86 | 27.3 |
| Less: Raw Materials Costs and Product Purchases | 31.52 | 41.39 | 31.3 |
| Equals: Gross Refining Margin | 7.65 | 8.47 | 10.7 |
| Less: Direct Operating Costs | 5.93 | 5.68 | -4.1 |
| Equals: Net Refining Margin ^a | 1.73 | 2.79 | 61.6 |
| Reseller/wholesaler spread (dealer price - wholesale price) | 5.08 | 5.08 | 0.1 |
| Retailer spread (company-operated price - dealer price) | 5.77 | 9.83 | 70.4 |

^aSee Appendix B, Table B32, for the components to calculate the refined product margin.
Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

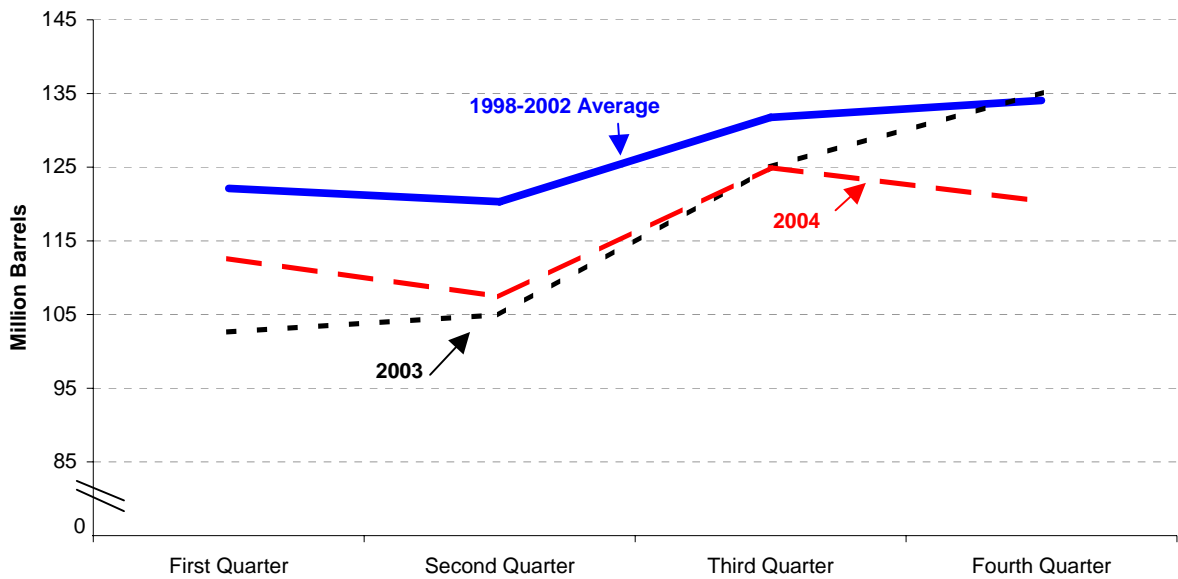
Figure 29. Quarterly Average U.S. Petroleum Product Stocks, 1998-2002 Average, 2003, and 2004



Source: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

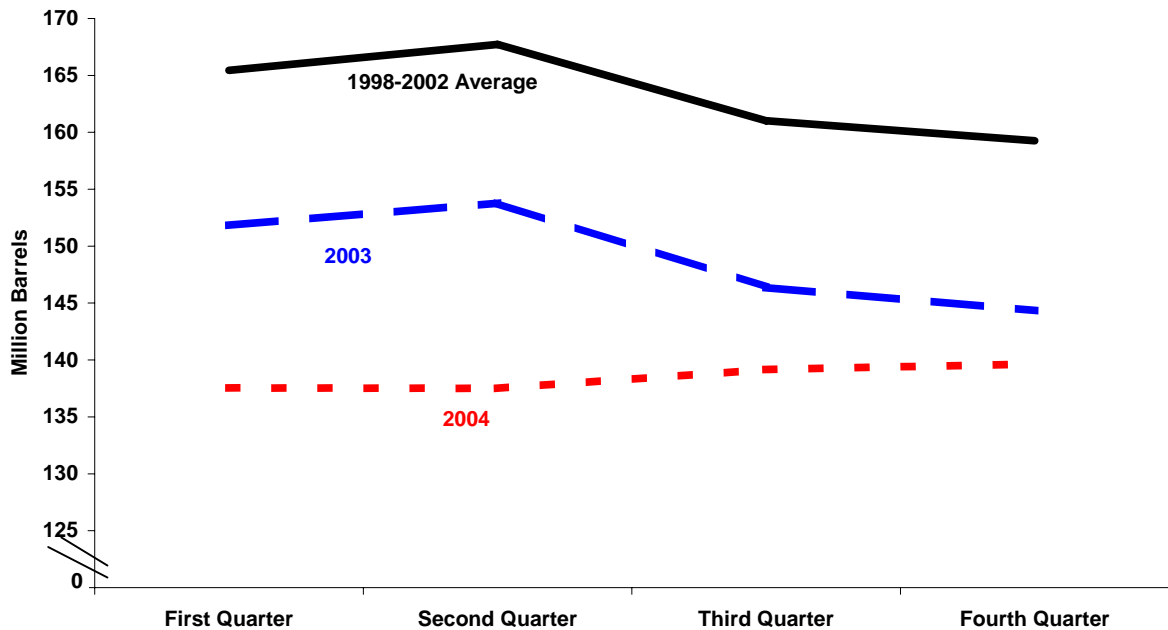
weighted heating degree days) in 2004 compared to 2003.⁷³ Meanwhile, U.S. crude oil stock levels were at historically low levels during all of 2004 relative to the averages for the 1998

Figure 30. Quarterly Average U.S. Distillate Stocks, 1998-2002 Average, 2003, and 2004



Source: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

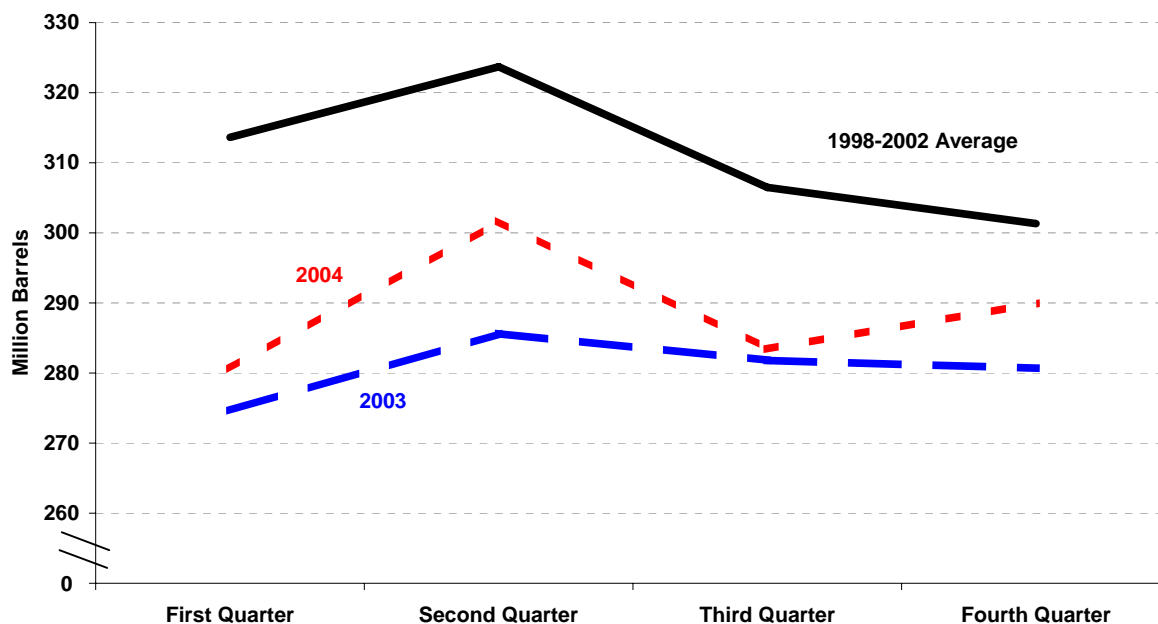
Figure 31. Quarterly Average U.S. Motor Gasoline Stocks, 1998-2002 Average, 2003, and 2004



Source: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

through 2002 period (**Figure 32**), contributing to the 30-percent increase in the price of crude oil and higher raw material costs for FRS companies.⁷⁴

Figure 32. Quarterly Average U.S. Commercial Crude Oil Stocks, 1998-2002 Average, 2003, and 2004



Source: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

Petroleum product sales increased a relatively slight 2-percent in 2004 relative to 2003 (**Table 14**). The product sales chiefly comprise motor gasoline and distillate, which increased 1 percent and 2 percent, respectively, while other products increased by 6 percent (**Table 15**). The result of higher sales and higher petroleum product prices was a 30-percent increase in domestic petroleum product sales revenues (**Table 16**). Revenue from other sources also increased substantially, but is too small to have much of an effect on overall profitability. However, operating costs are large and increased by a smaller percentage than did sales revenues (**Table 16**). This combination of increases in revenues and costs resulted in almost twice as much operating income in 2004 than in 2003 (\$20.1 billion and \$10.2 billion, respectively) and almost doubled net income relative to a year ago (\$14.8 billion and \$7.4 billion, respectively).

Overall operating expenses increased 28 percent between 2003 and 2004 (**Table 16**). However, those operating expenses most closely associated with refining and marketing operations on a per barrel basis fell 4 percent between 2003 and 2004 (**Table 14**). In particular, those operating expenses associated with refining (energy costs and other operating costs) fell,⁷⁵ while marketing costs increased slightly (increasing by \$0.10 per barrel) (**Table 15**).

Continued efforts by the FRS companies to reduce their energy costs were less successful in 2004 than in 2003, increasing \$0.21 per barrel. Part of the explanation for higher energy costs is the 10-percent increase in natural gas prices in 2004 relative to 2003.⁷⁶ Additionally, refinery output increased 3 percent, which magnified the effect of higher natural gas prices, further increasing energy costs. FRS companies continue their efforts to contain energy costs through cogeneration

Table 15. U.S. Refined Product Margins and Costs per Barrel Sold and Product Sales Volume for FRS Companies, 2003-2004

| | 2003 | 2004 | Percent Change 2003 - 2004 |
|-----------------------------|----------------------|--------|-------------------------------|
| | (Dollars per Barrel) | | |
| Gross Margin | 7.65 | 8.47 | 10.7 |
| - Marketing Costs | 1.36 | 1.35 | -0.7 |
| - Energy Costs | 1.42 | 1.74 | 22.8 |
| - Other Operating Costs | 3.15 | 2.59 | -17.7 |
| = Net Margin | 1.73 | 2.79 | 61.6 |
| | (Million Barrels) | | |
| Product Sales Volume | | | |
| Motor Gasoline | 11,928 | 12,063 | 1.1 |
| Distillate | 6,268 | 6,360 | 1.5 |
| Other Products | 3,897 | 4,127 | 5.9 |
| Total | 22,092 | 22,550 | 2.1 |

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

projects, which continue to come online.⁷⁷ Cogeneration projects have been one of the major approaches that these companies have taken to reduce their energy costs during the last few years.⁷⁸

Other operating costs related to refining fell significantly between 2003 and 2004, from \$3.15 per barrel to \$2.60 per barrel. The higher cost structure of the FRS companies that have been

involved in recent mergers may have declined somewhat, possibly because the adjustments of operations and corporate cultures following the many mergers and acquisitions involving FRS companies over the last few years appear to have concluded. Further, environmental spending to comply with the Clean Air Act Amendments of 1990 continues, but at a lower rate as another compliance deadline nears.⁷⁹

Retrenchment of marketing operations continued through both selective investment in outlets in profitable areas and sales of marginal outlets,⁸⁰ but with little apparent effect—marketing costs rose \$0.10 per barrel between 2003 and 2004, a 7-percent increase. Higher costs from extensive rebranding the marketing outlets of several companies apparently more than offset the cost reduction from reduced marketing networks.⁸¹ In particular, branded marketing outlets directly supplied by the FRS companies declined again in 2004 (**Figure 33**), falling 1 percent to 43,598 in 2004 (**Table 17**). Company-operated outlets were reduced negligibly (0.2 percent) in 2004, while dealer outlets were reduced by less than 2 percent. Efforts to eliminate marginal outlets tend to increase average productivity of the remaining outlets, which is measured by average outlet monthly motor gasoline sales volume,⁸² and is evident from the 15-percent increase in the productivity of all directly supplied branded outlets between 2003 and 2004.

Meanwhile, refinery capacity reported by the FRS companies increased negligibly (**Table 18**), as relatively small expansions in the capacity of many refineries offset Williams' sale of its 210,000 barrels-per-day North Pole, Alaska, refinery to Koch Industries.⁸³ Three intra-FRS transactions⁸⁴ shifted assets around as Sunoco purchased El Paso's Eagle Point refinery in Westville, New Jersey, in January;⁸⁵ Valero acquired El Paso's 315,000 barrels per day San Nicholas, Aruba,

Table 16. U.S. and Foreign Refining/Marketing^a Financial Items for FRS Companies, 2003-2004
(Million Dollars)

| | 2003 | 2004 | Percent Change 2003-2004 |
|--|---------|---------|--------------------------|
| Domestic Refining/Marketing Operations | | | |
| Refined Product Sales Revenue | 315,884 | 410,408 | 29.9 |
| Other Revenue ^b | 11,975 | 15,206 | 27.0 |
| Operating Expense ^{b, c} | 317,644 | 405,565 | 27.7 |
| Operating Income ^c | 10,215 | 20,049 | 96.3 |
| Net Income, excluding unusual Items | 7,832 | 15,076 | 92.5 |
| Unusual Items | -398 | -328 | -- |
| Net Income | 7,434 | 14,748 | 98.4 |
| Foreign Refining/Marketing Operations^a | | | |
| Refined Product Sales Revenue | 174,778 | 215,135 | 23.1 |
| Other Revenue ^b | 8,902 | 11,089 | 24.6 |
| Operating Expense ^{b, c} | 179,737 | 217,513 | 21.0 |
| Operating Income ^c | 3,943 | 8,711 | 120.9 |
| Net Income, excluding unusual Items | 3,039 | 7,298 | -- |
| Unusual Items | -123 | 12 | -- |
| Net Income | 2,916 | 7,310 | 150.7 |

^aIn order to prevent disclosure of company-level data the International Marine business segment has been combined with Foreign Refining/Marketing for this presentation. Relative to Foreign Refining/Marketing, International Marine is about one-tenth the size and has little material effect on the overall results of Foreign Refining/Marketing.

^bRaw materials revenues are netted against total operating expense.

^cExcludes Unusual Items.

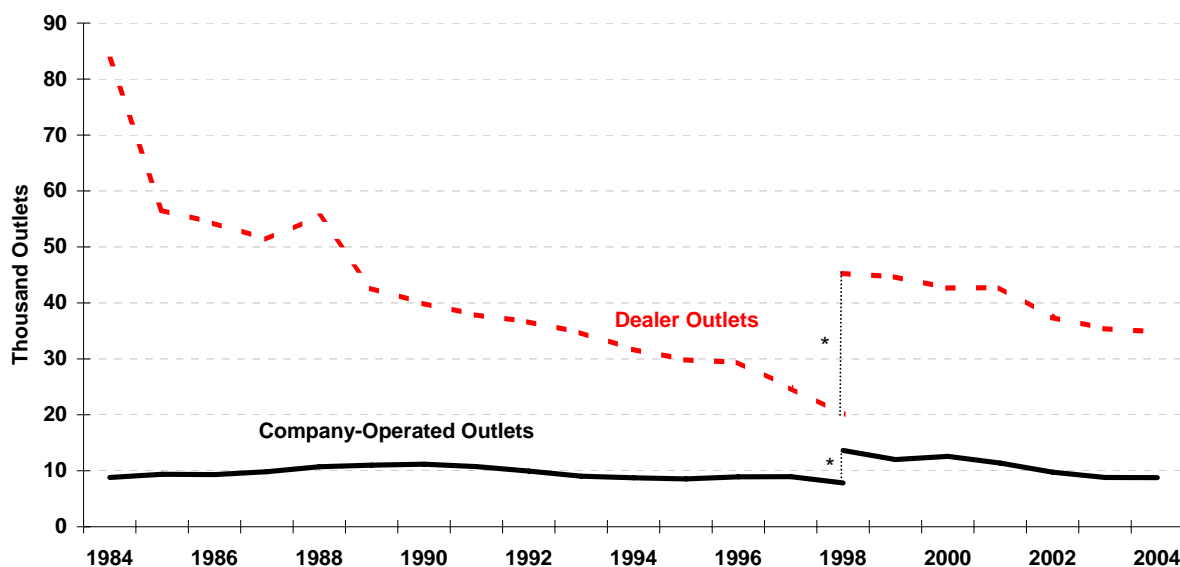
-- = Not meaningful.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

refinery in March;⁸⁶ and Premcor acquired Motiva's Delaware City, Delaware, refinery in May.⁸⁷ Refinery upgrades, mainly to meet Phase II-compliant petroleum products or to increase the ability to process heavier and/or higher sulfur crude oil,⁸⁸ increased additions to U.S. refining net investment in place. The combination of transactions, environmental investment, and turnaround spending contributed to an 18-percent increase in U.S. refining additions to net investment in place.⁸⁹

Successful efforts to increase the complexity of the FRS refineries during the last several years (**Table 19**) allow the FRS companies to refine a wide range of crude oils, enabling them to take advantage of price differences between the relatively lower-cost heavy crude oils and the relatively higher-cost light crude oils⁹⁰ and transform them into relatively higher-priced, light products. The price of lighter products (represented by the price of motor gasoline) increased \$10.78 per barrel relative to the price of heavier products (represented by the price of residual fuel oil) (**Figure 34**). Similarly, during 2004 the price of light crude oil relative to heavy crude increased (**Figure 35**), raising the discount paid for heavy crude oil from \$7.11 per barrel in 2003 to \$10.48 per barrel in 2004. These price movements favored companies with complex refineries and provided additional incentives for companies to expand their capability to process heavy crude oil.

Figure 33. Company-Operated and Dealer Outlets for FRS Companies, 1984-2004



*The addition of 11 companies to the group of U.S. majors in 1998, the largest single-year change in the history of the Financial Reporting System, resulted in the vertical displacement of the series in 1998.

Note: Only outlets directly supplied by the FRS companies are included here.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

The year 2004 was the most profitable in the 28-year history of the FRS and followed a recent series of unusually profitable years, which were broken in 2002 by the most unprofitable year in the history of the FRS. The primary reason for the increased profitability of the FRS U.S. refining/marketing operations in 2004 relative to 2003 was twofold. First, the gross refining margin increased by \$1.04 per barrel, which was mainly due to product prices increasing faster than raw materials prices.TPD⁹¹DPT Second, operating costs declined \$0.23 per barrel between 2003 and 2004. Declines in other refining costs outweighed higher energy and marketing costs. The combination of these two factors increased the net refining margin by more than \$1 per barrel, which was a 73-percent increase. It appears that FRS cost-cutting efforts over the last several years have enabled the FRS operations to better withstand the vicissitudes of their industry, particularly variable energy costs. Continued efforts to eliminate marginal outlets among of the FRS companies' motor gasoline retailing operations (and the resulting decline in marketing costs) suggests that FRS companies' continue to attempt to place a floor beneath their profitability.

Foreign Refining and Marketing⁹²

Two years after recording the all-time low in profitability in the 28-year history of the FRS, FRS companies achieved a near all-time high for return on net investment in place of foreign refining/marketing operations. The profit rate of 19 percent was 11 percentage points higher than that of 2003 but still somewhat lower than the highs of 1979 and 1980 (22 and 21 percent, respectively) (**Figure 28**). An increase in refined product and other revenue relative to 2003, partially offset by an increase in operating expense, resulted in more than a doubling of operating income and a \$4.4-billion increase in net income (**Table 16**).

Table 17. Motor Gasoline Distribution and Number of Direct-Supplied Branded Outlets for FRS Companies, 2003-2004

| | 2003 | 2004 | Percent Change 2003-2004 |
|-------------------------------|--|---------|-----------------------------|
| Third-Party Volume | (Million Barrels) | | |
| Wholesale | 2,507.7 | 2,308.2 | -8.0 |
| Retail | | | |
| Dealer | 797.1 | 881.0 | 10.5 |
| Company-Operated | 556.2 | 508.3 | -8.6 |
| Total Retail | 1,353.3 | 1,389.4 | 2.7 |
| Direct | 572.2 | 610.4 | 6.7 |
| Total Third-Party Volume | 4,433.2 | 4,308.0 | -2.8 |
| Intersegment Volume | 44.9 | 78.5 | 74.7 |
| | (Number of Direct-Supplied Branded Outlets) | | |
| Dealer Outlets | 35,403 | 34,816 | -1.7 |
| Company-Operated Outlets | 8,804 | 8,782 | -0.2 |
| Total Retail Outlets | 44,207 | 43,598 | -1.4 |
| Average Monthly Outlet Volume | (Thousand Gallons per Month) | | |
| Dealers | 78.8 | 88.6 | 12.4 |
| Company-Operated | 171.6 | 202.5 | 18.0 |
| All Direct-Supplied Outlets | 97.3 | 111.5 | 14.6 |

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

Table 18. U.S. and Foreign Refining/Marketing Investment and Refining Operating Items for FRS Companies, 2003-2004

| | 2003 | 2004 | Percent Change 2003-2004 |
|---|-----------------------------------|--------|-----------------------------|
| | (Billion Dollars) | | |
| U.S. Refining Additions to Investment in Place | 6.8 | 8.1 | 18.4 |
| U.S. Marketing Additions to Investment in Place | 3.1 | 2.8 | -10.1 |
| Foreign Refining/Marketing Additions to Investment in Place | 2.7 | 2.9 | 7.8 |
| | (Thousand Barrels per Day) | | |
| U.S. Refining Capacity | 14,709 | 14,839 | 0.9 |
| U.S. Refinery Output | 14,587 | 15,082 | 3.4 |
| Foreign Refining Capacity | 5,374 | 5,698 | 6.0 |
| Foreign Refinery Output | 4,622 | 4,905 | 6.1 |
| | (Percent) | | |
| U.S. Refinery Utilization Rate ¹ | 91.5 | 92.6 | (2) |
| Foreign Refinery Utilization Rate ¹ | 84.8 | 88.3 | (2) |

¹Refinery utilization rate is calculated by dividing runs to stills at own refineries by the average of the year beginning and year ending crude oil distillation capacity.

²Not meaningful.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

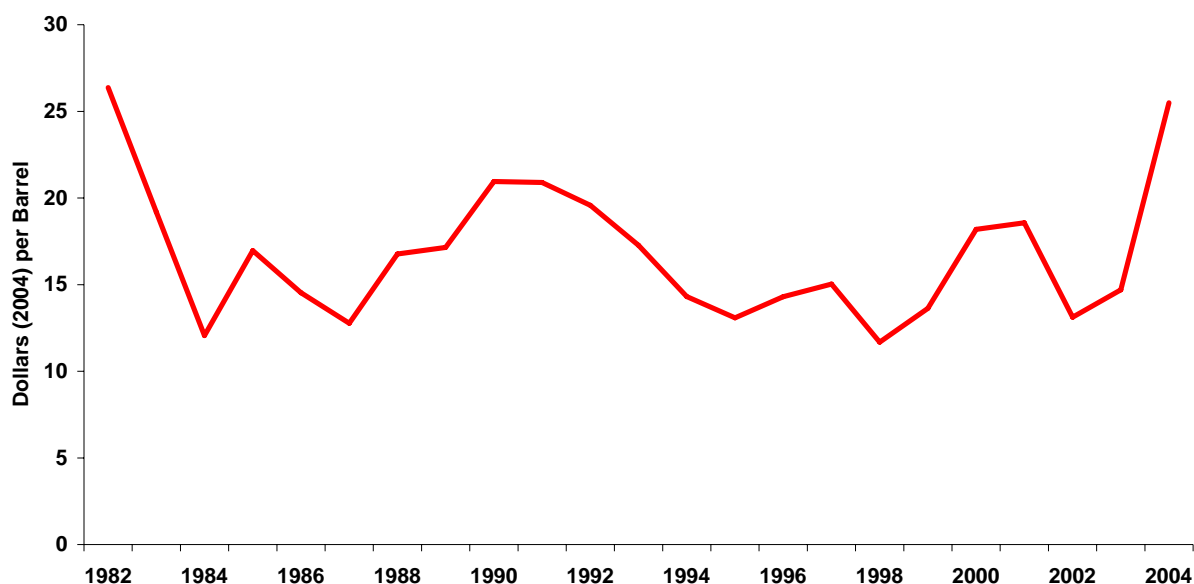
Table 19. U.S. Refinery Configurations of FRS Companies, Selected Years, 1974-2004
(Percent)

| | 1974 | 1981 | 1993 | 1996 | 1997 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|--|------|------|------|------|------|------|------|------|------|------|
| Integrated Refiners (includes joint ventures) | Downstream capacity as a percent of crude distillation capacity | | | | | | | | | | |
| Coking | n.c. | n.c. | n.c. | 13.0 | 12.6 | 12.9 | 13.9 | 15.1 | 15.2 | 15.4 | 15.7 |
| Catalytic cracking | 27.7 | 30.4 | 36.5 | 33.8 | 35.9 | 35.8 | 35.6 | 35.5 | 34.0 | 33.4 | 33.7 |
| Catalytic reforming | 17.6 | 22.4 | 25.8 | 24.9 | 23.4 | 22.3 | 22.4 | 22.0 | 22.3 | 21.8 | 21.8 |
| Hydro cracking | 5.6 | 5.7 | 9.6 | 9.6 | 9.6 | 10.9 | 11.0 | 11.6 | 11.6 | 10.4 | 10.7 |
| Catalytic hydrotreating | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | 79.5 |
| Alkylation | 4.8 | 5.3 | 7.7 | 6.8 | 7.5 | 7.4 | 7.4 | 7.2 | 7.1 | 7.2 | 7.3 |
| Non-integrated refiners (includes CITGO and Motiva) | | | | | | | | | | | |
| Coking | n.c. | n.c. | n.c. | 11.0 | 12.7 | 12.0 | 12.1 | 12.4 | 12.0 | 13.5 | 14.7 |
| Catalytic cracking | n.c. | n.c. | n.c. | 29.8 | 34.1 | 34.0 | 35.5 | 35.5 | 36.3 | 36.7 | 38.4 |
| Catalytic reforming | n.c. | n.c. | n.c. | 18.9 | 21.5 | 22.5 | 21.9 | 21.7 | 21.4 | 21.1 | 21.8 |
| Hydro cracking | n.c. | n.c. | n.c. | 6.3 | 7.8 | 8.6 | 8.6 | 8.4 | 7.8 | 8.5 | 8.7 |
| Catalytic hydrotreating | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | 71.4 |
| Alkylation | n.c. | n.c. | n.c. | 6.0 | 6.8 | 6.0 | 6.3 | 6.3 | 6.4 | 6.4 | 6.9 |

n.c.: Information not collected.

Sources: *Oil and Gas Journal*, "Worldwide Refinery Report," 1974, 1981, 1993, 1996, 1997, 1999, 2000, 2001, 2002, 2003, and 2004.

Figure 34. Resale Price Difference Between Motor Gasoline and Residual Fuel Oil, 1982-2004

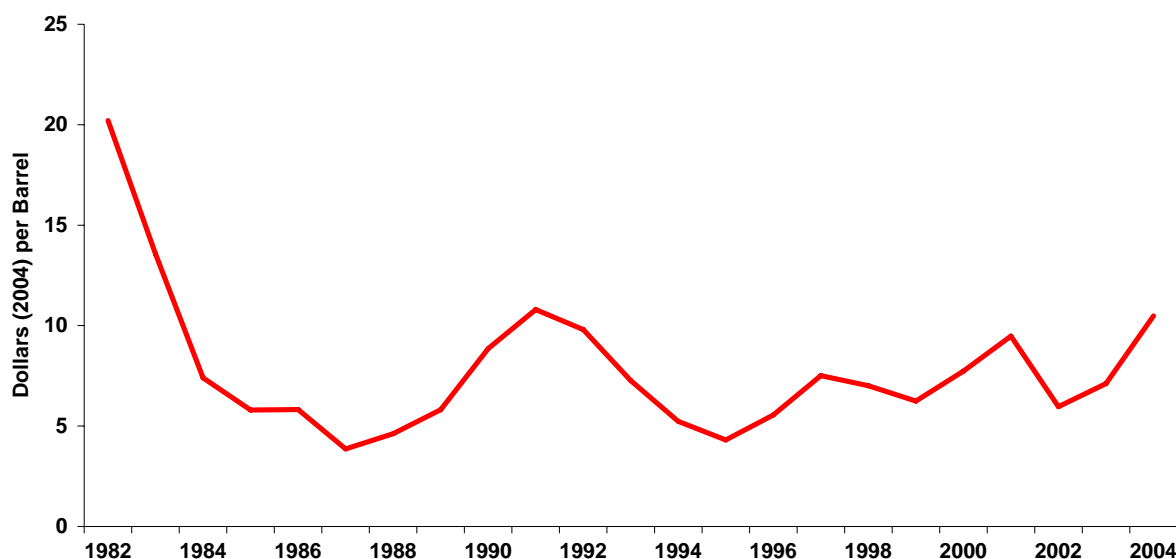


Note: Motor gasoline tends to sell for a higher price per barrel than does residual fuel oil. Thus, the vertical distance of the line in the figure from the horizontal axis indicates the premium paid for motor gasoline relative to residual fuel oil.

Source: Energy Information Administration, *Petroleum Marketing Monthly*, DOE/EIA-0380, Table 4.

The FRS companies derive their foreign refining/marketing earnings from two sources: unconsolidated affiliates and consolidated operations. In general, the corporate parent of an

Figure 35. Price Difference Between Light Crude Oil and Heavy Crude Oil, 1982-2004



Note: Light crude oil tends to sell for a higher price per barrel than does heavy crude oil. Thus, the vertical distance of the line in the figure from the horizontal axis indicates the premium paid for light crude oil relative to heavy crude oil. The more expensive light crude oil is defined here as having an API gravity of 40.1 or greater and heavy crude oil is defined as having an API gravity of 20 or less.

Source: Energy Information Administration, *Petroleum Marketing Monthly*, DOE/EIA-0380, Tables 27 and 28.

unconsolidated affiliate owns 50 percent, or less, of the affiliate, and does not directly control the affiliate (a joint venture, for example, is usually an unconsolidated affiliate from the perspective of at least one of the partners⁹³). Essentially, the unconsolidated affiliate is more of a property or holding of the parent corporation than a company that the parent corporation operates. The effect on financial operations of an unconsolidated affiliate can be seen only on the parent corporation's income statement, where the parent company's proportional share of the affiliate's net income is reported. Conversely, the parent corporation directly controls a fully consolidated affiliate (although it could be owned by several companies, with the parent corporation owning more than 50 percent). In addition, the parent corporation reports all operating and financial information about a fully consolidated affiliate (such as revenues) in its public financial disclosures, not just its proportional share.

Historically, the operations of the FRS companies' unconsolidated foreign refining/marketing affiliates have been mainly in Asia Pacific. Chevron owns much of the FRS Asia Pacific refinery capacity, most of which is unconsolidated. In fact, 69 percent of FRS unconsolidated foreign refinery capacity was in Asia Pacific in 2004 (**Table 20**). Almost half of FRS consolidated foreign refinery capacity is located in Europe, 48 percent in 2004, with much of the remaining consolidated refinery capacity in Asia Pacific.

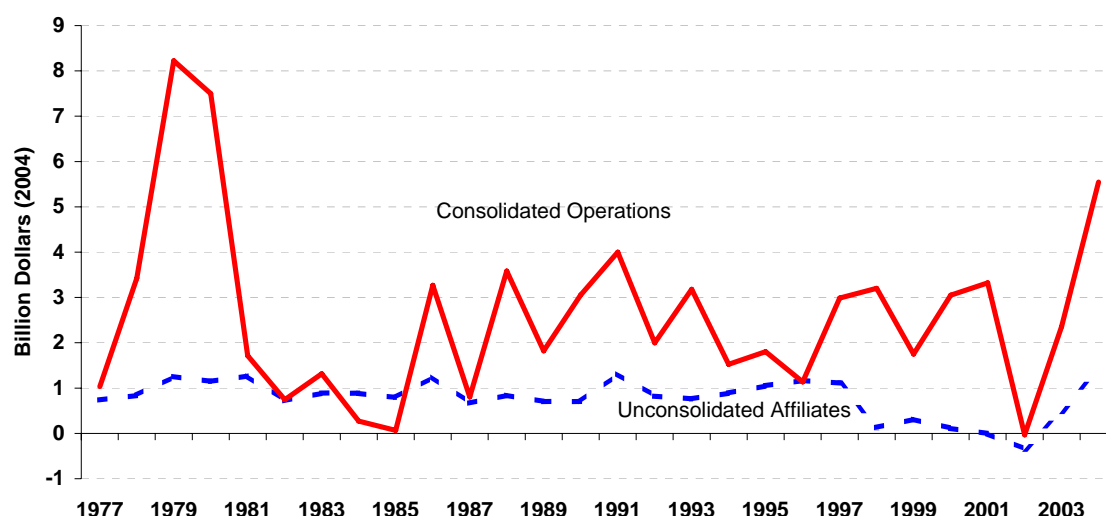
The increase between 2003 and 2004 in FRS foreign refining/marketing operations was due to large increases in both consolidated and unconsolidated operations (**Figure 36**). The companies cited a variety of reasons for the increased profitability of FRS foreign refining/marketing operations (both consolidated and unconsolidated) in public statements, including increased

Table 20. Regional Distribution of Foreign Refinery Capacity for FRS Companies, 2003-2004
(Percent)

| | Consolidated Operations | | Unconsolidated Affiliates | |
|--------------------|-------------------------|--------------|---------------------------|--------------|
| | 2003 | 2004 | 2003 | 2004 |
| Europe | 48.1 | 48.0 | 17.5 | 17.0 |
| Asia | 26.1 | 26.5 | 68.2 | 69.1 |
| Latin America | 9.1 | 9.1 | 0.7 | 0.6 |
| Canada | 14.1 | 13.9 | 0.0 | 0.0 |
| Other | 2.6 | 2.5 | 13.6 | 13.2 |
| Grand Total | 100.0 | 100.0 | 100.0 | 100.0 |

Note: The region denoted as "Other" includes Africa and the Middle East.
Sources: Company Annual Reports and filings of U.S. Securities and Exchange Commission Form 10-K.

Figure 36. Foreign Refining/Marketing Net Income^a from Consolidated Operations and Unconsolidated Affiliates of FRS Companies, 1977-2004



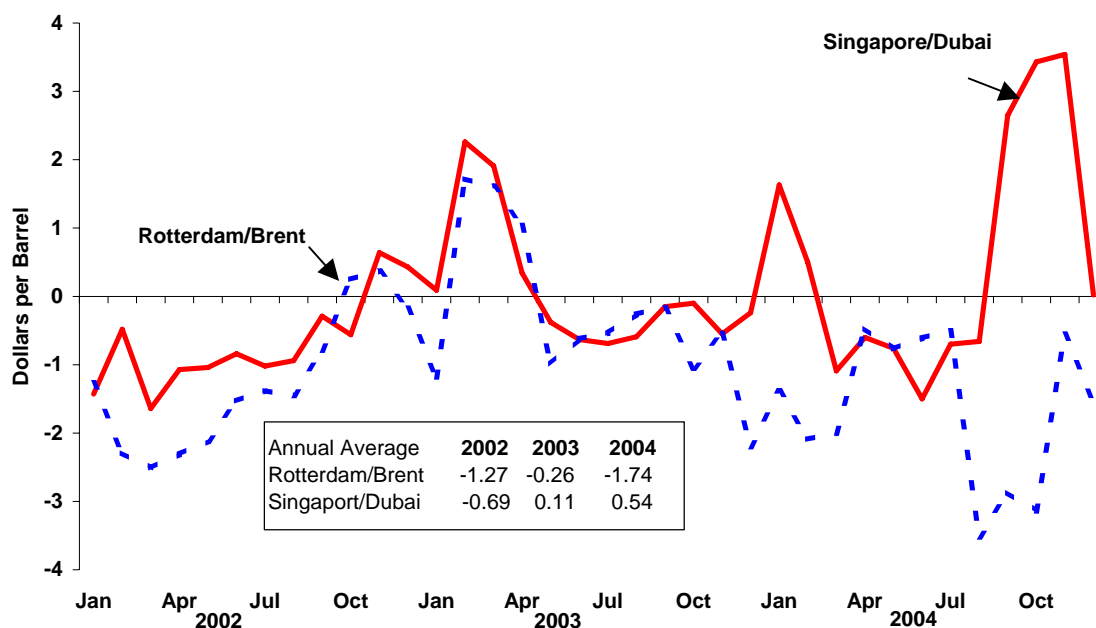
^aThe International Marine business segment has been combined with Foreign Refining/Marketing for this presentation in order to prevent disclosure of company-level data. Relative to Foreign Refining/Marketing, International Marine is about one-tenth the size and has little material effect on the overall results of Foreign Refining/Marketing.

Source: Energy Information Administration, Form EIA-28 (Financial Reporting System).

worldwide demand and product sales, TPD⁹⁴ DPT improved refinery output slate, TPD⁹⁵ DPT greater price differential between heavy/sour crude oil and light/sweet crude oil,⁹⁶ reduced energy⁹⁷ and other operating costs,⁹⁸ and higher utilization rates.⁹⁹

During 2004, the FRS companies' unconsolidated affiliates¹⁰⁰ generated \$1,414 million of net income, which almost trebled the level of 2003 and was the highest level in the 28-year history of the FRS (in 2004 dollars). For the industry, Asia Pacific refining margins of 2004 were higher than those of 2003, mostly from September onward (**Figure 37**). The late surge was sufficient that the annual gross refining margin in Asia Pacific (represented by the Singapore/Dubai gross refining margin) in 2004 averaged \$0.43 per barrel more than in 2003.

Figure 37. Foreign Gross Refining Margins, 2002-2004



Sources: Energy Intelligence Group, *Oil Market Intelligence* **2002**: January 2003 and July 2002, p. 12; **2003**: January 2004 and July 2003, p. 12; and **2004**: January 2005 and July 2004, p. 12.

Consumption of petroleum products in Asia Pacific (combining Asian Developing Countries with Australia, Japan, and New Zealand) increased between 2003 and 2004 (**Figure 38**), increasing by 5 percent entirely because of an 8-percent increase in petroleum consumption by the Asian Developing Countries. Increased consumption fueled higher returns from the FRS unconsolidated foreign refining/marketing operations. Company public disclosures noted several reasons for the higher earnings generated by the Asia Pacific operations of the FRS companies, including increased refinery runs¹⁰¹ in response to market conditions,¹⁰² and increased light product demand in Asia Pacific, particularly in China.¹⁰³

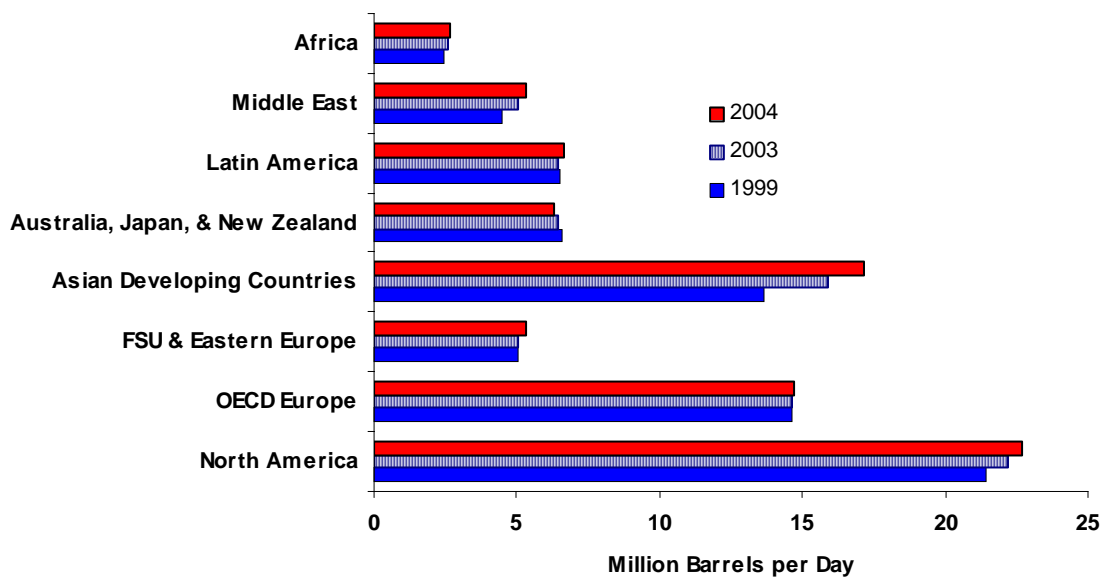
Net income of the FRS companies' consolidated operations increased between 2003 and 2004 (**Figure 36**), providing \$5,545 million of net income, which was 141 percent higher than net income in 2003. Higher earnings were negligibly aided by an almost imperceptible increase in Europe's consumption of petroleum products (**Figure 38**), which increased 0.4 percent between 2003 and 2004.

European refining margins (represented by the Rotterdam/Brent gross refining margin) were consistently lower during 2004 than in 2003 (**Figure 37**), with a few exceptions (June, July, and December). The ultimate result was that the average margin for 2004 was \$1.56 per barrel lower than the average margin for 2003.

Thus, FRS companies' consolidated earnings increased substantially despite essentially unchanged petroleum product consumption and an appreciable decrease in the refining margin. Public disclosures of the FRS companies with European operations cited many factors, including increased refinery runs,¹⁰⁴ reorganized and upgraded refineries,¹⁰⁵ utilization of low-cost refinery

inputs,¹⁰⁶ additional refinery capacity,¹⁰⁷ and expansion of retail sales and selective marketing growth.¹⁰⁸ Some FRS European refineries are particularly well placed to export petroleum products to the United States, but they did not directly tie that ability to the increased net income of 2004 relative to 2003¹⁰⁹

Figure 38. Petroleum Consumption by Region, 1999, 2003, and 2004



Source: BP plc, *BP Statistical Review of World Energy* (June 2005), p. 9.

Endnotes

⁶⁶ Alternatively, finding costs are the exploration, development, and property acquisition costs of replacing reserves removed through production.

⁶⁷ One inherent limitation of measuring finding costs this way is that the expenditures and the reserve additions recognized in a particular interval do not usually correspond exactly with each other. Expenditures are usually recognized in the period that the payment actually occurred. Proven reserves are usually recognized when there is reasonable certainty that they can be produced economically. There is no reason that these must occur in the same time period (oil and gas wells often are operated over a long time period), so that some expenditures may not be recognized in the same time period that their corresponding reserves are recognized. One way to moderate this limitation is to increase the length of the time period over which finding costs are measured, allowing reserve additions and exploration and development expenditures to match up more closely. However, the longer the time period over which finding costs are measured, the more out of date they become, because they include older and older expenditures and reserves, and costs and technology are constantly changing. The only way to solve the correspondence problem would be to calculate an average finding cost for all of the oil and gas produced by a well after it is permanently shut in. But then many costs included would be considerably out of date.

⁶⁸ That is, finding costs times production equals the estimated expenditures necessary to replace production. For the calculation presented here, we used real finding costs for the period covering the year of production and the previous 2 years.

⁶⁹ As has been mentioned numerous times over the last few years, the net margin is highly correlated with return on investment. The correlation was re-estimated for a discussion of the relationship between refining margins and profitability and the correlation coefficient was found to be 0.93. See “Refining Margins as Predictors of Profitability” in Chapter 4 of last year’s publication.

⁷⁰ More precisely, gross margins are calculated, on a per-barrel basis, by taking refined product revenues minus purchases of raw materials input to refining and refined product purchases.

⁷¹ The net margin excludes peripheral activities such as non-petroleum product sales at convenience stores.

⁷² The stock levels of 2004 varied between 12 percent and 18 percent lower relative to the average for the period 1998 through 2002.

⁷³ Energy Information Administration, *Short-Term Energy Outlook* (Washington, D.C., November 8, 2005), Table A1. This publication is available on the Internet at <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/nov05.pdf> (as of December 2, 2005).

⁷⁴ Energy Information Administration, *Annual Energy Review 2004*, DOE/EIA-0384 (2004) (Washington, D.C., September 13, 2005), Table 5.21 (Composite Refiner Acquisition Cost). This table is available on the Internet at <http://www.eia.doe.gov/emeu/aer/petro.html> (as of December 2, 2005).

⁷⁵ Refining energy costs rose, but other refining costs fell, with the net effect that overall refining costs fell 4 percent between 2003 and 2004.

⁷⁶ Energy Information Administration, *Annual Energy Review 2004*, DOE/EIA-0384 (2004) (Washington, D.C., September 13, 2004), Table 6.7 (Nominal Wellhead Price). This table is available on the Internet at <http://www.eia.doe.gov/emeu/aer/natgas.html> (as of December 2, 2005).

⁷⁷ During 2004, Exxon Mobil started up cogeneration facilities at its Baytown, Texas, and Beaumont, Texas, refineries (Exxon Mobil Corporation, *2004 Financial and Operating Review*, p. 68).

⁷⁸ See for example, Energy Information Administration, *Performance Profiles of Major Energy Producers 2001*, DOE/EIA-0206 (2001) (Washington, D.C., January 2003), p.43 (This publication is available on the Internet from a link at <http://www.eia.doe.gov/emeu/finance/histlib.html> [as of December 2, 2005].)

⁷⁹ Although we have no estimate of the significance of the environmental spending in 2004’s “other operating costs,” some companies (e.g., ConocoPhillips Company, *2004 Annual Report*, p. 49) mentioned environmental expenses of more than \$600 million during 2004. Additionally, a recent study that examined these is available on EIA’s Web site at http://www.eia.doe.gov/emeu/perfpro/ref_pi2/index.html.

⁸⁰ Amerada Hess acquired 50 retail outlets during 2004 (Amerada Hess Corporation, 2004 U. Securities and Exchange Commission Form 10-K filing, p. 6). ChevronTexaco continued to market and sell retail outlets, a strategy they initially implemented in early 2003, and had disposed about 1,600 outlets by the end of 2004 (ChevronTexaco Corporation, *2004 Annual Report*, p. 30). ConocoPhillips continues to renovate its Phillips 66, Conoco, and 76 branded outlets to give a consistent appearance to the outlets and reduce

operating costs. ConocoPhillips also sold its Mobil-branded East Coast marketing assets in two transactions during the spring of 2004, which included a total of 450 company-operated and dealer outlets (ConocoPhillips Company, *2004 Annual Report*, pp. 16 and 75). Exxon Mobil added 300 On the Run convenience stores during 2004 (Exxon Mobil Corporation, *2004 Financial and Operating Review*, p. 71). Marathon sold an unspecified number of Speedway SuperAmerica outlets to Sunoco during 2004 (Marathon Oil Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K, p. 39). More than 4,600 Texaco-branded retail outlets were converted between 2002 and the end of 2004 to the Shell brand (Shell Oil Company, Press Release [August 10, 2004]). In April, Sunoco acquired 340 Mobil-branded retail outlets from ConocoPhillips and began rebranding the outlets to Sunoco, many of which will have an Aplus convenience store (Sunoco, Inc., 2004 U.S. Securities and Exchange Commission Form 10-K, p. 8).

⁸¹ ConocoPhillips continues to renovate its Phillips 66, Conoco, and 76 branded outlets to give a consistent appearance to the outlets and maintain low-cost operations (ConocoPhillips Company, *2004 Annual Report*, p. 16). More than 4,600 Texaco-branded retail outlets were converted between 2002 and the end of 2004 to the Shell brand (Shell Oil Company, Press Release [August 10, 2004]). In April, Sunoco acquired 340 Mobil-branded retail outlets from ConocoPhillips and began rebranding the outlets to Sunoco, many of which will have an Aplus convenience store (Sunoco, Inc., 2004 U.S. Securities and Exchange Commission Form 10-K, p. 8).

⁸² However, some FRS companies have noted in the past that these efforts can be frustrated if productive dealers elect to change brands.

⁸³ Energy Information Administration, *Petroleum Supply Annual 2004*, Volume 1, DOE/EIA-0340(04)/1 (June 2005, Washington, DC), Table 49. Available on the Internet at http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/psa_volume1.html (as of December 4, 2005).

⁸⁴ These four transactions also reduced the number of FRS companies with refining assets by two, because both El Paso and Williams no longer own any refinery capacity.

⁸⁵ Sunoco Inc., “Sunoco Closes Eagle Point Refinery Acquisition; Provides Fourth Quarter Earnings Guidance” (January 13, 2004). Available on the Internet at <http://www.sunocoinc.com/aboutsunoco/newsandspeeches/3992f.htm> (as of December 4, 2005).

⁸⁶ Valero Energy Corporation, “Valero Energy Corporation Completes Aruba Acquisition” (March 5, 2004). Available on the Internet at http://www.valero.com/NewsRoom/News+Releases/NR_2004-03-05.htm (as of December 4, 2005).

⁸⁷ Premcor Inc., “Premcor Completes Purchase of Motiva Enterprises’ Delaware City Refining Complex” (May 3, 2004). Available on the Internet at http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=PCO&script=417&layout=-6&item_id=521987 (as of December 4, 2005).

⁸⁸ Several FRS companies mentioned upgrading projects in their public financial disclosures, whether to comply with Tier II requirements or to process lower grades of crude oil. These included CITGO (CITGO Petroleum Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 15), ConocoPhillips (ConocoPhillips Petroleum Company, *2004 Annual Report*, pp. 15, 47, and 48), Exxon Mobil (Exxon Mobil Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 39; and *2004 Financial and Operating Review*, p. 65), Marathon (Marathon Oil Corporation, *2004 Annual Report*, pp. 5 and 14; and 2004 U.S. Securities and Exchange Commission Form 10-K Filing, pp. 13 and 19), Premcor (Premcor Inc., 2004 U.S. Securities and Exchange Commission Form 10-K Filing, pp. 20 and 52), Sunoco (Sunoco Inc., 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 6; and *2004 Annual Report*, p. 30), Tesoro (Tesoro Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K Filing, pp. 36 and 40), and Valero (Valero Energy Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K Filing, pp. 16 and 42).

⁸⁹ Some of the companies mentioned that capital spending increased, but gave no reasons for the change; for example, Amerada Hess (Amerada Hess Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 45).

⁹⁰ The efforts continue. For example, ConocoPhillips (ConocoPhillips Company, *2004 Annual Report*, p. 48), Premcor (Premcor Inc., 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 4), and Valero (Valero Energy Corporation, 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 27) all made investments or acquisitions during 2004 that increased the company’s ability to process heavier, lower cost crude oil.

⁹¹ Actually, raw material prices and the prices paid for petroleum product purchases.

⁹² The International Marine business segment has been combined with Foreign Refining/Marketing for this presentation to prevent disclosure of company-level data. Relative to Foreign Refining/Marketing, International Marine is about one-tenth the size and has little material effect on the overall results of Foreign Refining/Marketing.

⁹³ The Caltex joint venture was an unconsolidated affiliate for both of its parents, Chevron and Texaco.

⁹⁴ ChevronTexaco Corporation, *2004 Annual Report*, p. 30, and *2004 Supplement to the Annual Report*, p. 42.

⁹⁵ Exxon Mobil Corporation, *2004 Financial and Operating Review*, p. 69.

⁹⁶ Chevron Texaco Corporation, *2004 Supplement to the Annual Report*, p. 42.

⁹⁷ Exxon Mobil Corporation, *2004 Financial and Operating Review*, p. 69.

⁹⁸ Exxon Mobil, 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 33.

⁹⁹ Exxon Mobil, 2004 U.S. Securities and Exchange Commission Form 10-K filing, p. 33.

¹⁰⁰ The parent company owns less than 50 percent of an affiliate. Only the parent company's proportional share of the affiliate's net income is reported.

¹⁰¹ Exxon Mobil Corporation, *2004 Financial and Operating Review*, p. 76, and ChevronTexaco Corporation, *2004 Supplement to the Annual Report*, p. 50.

¹⁰² ChevronTexaco Corporation, *2004 Supplement to the Annual Report*, p. 42.

¹⁰³ ChevronTexaco Corporation, *2004 Supplement to the Annual Report*, p. 42.

¹⁰⁴ ChevronTexaco Corporation, *2004 Supplement to the Annual Report*, p. 43.

¹⁰⁵ ConocoPhillips Company, *2004 Annual Report*, p. 15.

¹⁰⁶ ChevronTexaco Corporation, *2004 Supplement to the Annual Report*, p. 44, and Exxon Mobil Corporation, *2004 Financial and Operating Review*, p. 69.

¹⁰⁷ ConocoPhillips Company, *2004 Annual Report*, p. 15.

¹⁰⁸ ConocoPhillips Company, *2004 Annual Report*, pp. 16 and 48.

¹⁰⁹ In particular, ChevronTexaco indicated that its United Kingdom refinery had this capability as did ConocoPhillips, regarding its Ireland and United Kingdom refineries.